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TITLE: Cellular immunogens comprising cognate proto-oxogenes

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INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Halpern; Michael S	West Newton	MA		
England; James M	Media	PA		

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CLAIMS:

What is claimed is:

1. A cellular immunogen for use in a mammalian host comprising host cells which have been transfected with at least one vector comprising at least one cognate proto-oncogene deleted in a region which encodes an amino acid sequence required for transformation and which consists of wildtype sequences outside the deletion site and a strong promoter to drive the expression of the cognate proto-oncogene in the transfected cells, wherein said cognate proto-oncogene is non-transforming, and wherein the host cells are selected from the group consisting of professional antigen-presenting cells, fibroblasts and cells obtained from a skin punch biopsy.

2. An immunogen according to claim 1 wherein the transfected cells are non-dividing.

3. An immunogen according to claim 1 wherein the host cells have been transfected with a cognate proto-oncogene selected from the group consisting of AKT-2, c-erbB-2, mdm-2, c-myc, c-myb, c-ras, c-src and c-yes.

4. An immunogen according to claim 1 wherein the cells comprise fibroblasts.

5. A method for preparing a cellular immunogen for use in a mammalian host comprising:

(a) excising cells from the host;

(b) transfecting the excised cells with at least one vector comprising at least one cognate proto-oncogene deleted in a region which encodes an amino acid sequence required for transformation and which consists of wildtype

sequences outside the deletion site and a promoter to drive the expression of the cognate proto-oncogene in the transfected cells,

wherein said cognate proto-oncogene is non-transforming and is cognate to a target proto-oncogene, and wherein the cells are selected from the group consisting of professional antigen-presenting cells, fibroblasts and cells obtained from a skin punch biopsy.

6. A method according to claim 5 wherein the transfected cells are non-dividing.

7. A method according to claim 5 wherein the cognate proto-oncogene is selected from the group consisting of AKT-2, c-erbB2, mdm-2, c-myc, c-myb, c-ras, c-src and c-yes.

8. A method according to claim 5 wherein the excised cells comprise fibroblasts.

9. A method of delaying onset of tumor growth in a mammalian host at risk for developing a tumor, which tumor is characterized by the overexpression of a target proto-oncogene, comprising:

(a) excising cells from the host;

(b) transfecting the excised cells with at least one vector comprising at least one cognate proto-oncogene and a promoter to drive the expression of the cognate proto-oncogene in the transfected cells; and

(c) returning the excised cells transfected with the vector to the body of the host to obtain expression of the cognate proto-oncogene in the host,

wherein the transfected cells are selected from the group consisting of professional antigen-presenting cells, fibroblasts and cells obtained from a skin punch biopsy, and wherein the cognate proto-oncogene is cognate to the target proto-oncogene and encodes a gene product which induces host immunoreactivity to host self-determinants of the product of the target proto-oncogene.

10. A method according to claim 9 wherein the transfected cells are rendered non-dividing prior to return to the body of the host.

11. A method according to claim 9 wherein the cognate proto-oncogene is selected from the group consisting of AKT-2, c-erbB2, mdm-2, c-myc, c-myb, c-ras, c-src and c-yes.

12. A method according to claim 9 wherein the excised host cells comprise fibroblasts.

13. An immunogen according to claim 1 wherein the professional antigen-presenting cells are selected from the group consisting of macrophages and dendritic cells.

14. A method according to claim 5 wherein the professional antigen-presenting cells are selected from the group consisting of macrophages and dendritic cells.

15. A method according to claim 9 wherein the professional antigen-presenting cells are selected from the group consisting of macrophages and dendritic cells.

16. A method according to claim 9 wherein the transfected cells are returned to the body of the host by subcutaneous, intradermal or intraperitoneal administration.

17. A method of generating an immune response in a mammalian host at risk for developing a tumor, wherein the tumor is characterized by the overexpression of a target proto-oncogene, comprising:

(a) excising cells from the host, wherein the cells are selected from the group consisting of professional antigen-presenting cells, fibroblasts and cells obtained from a skin punch biopsy;

(b) transfecting the excised cells with at least one vector comprising at least one cognate proto-oncogene and a promoter to drive the expression of the cognate proto-oncogene in the transfected cells, wherein the cognate proto-oncogene is cognate to the target proto-oncogene and encodes a gene product which induces host immunoreactivity to host self-determinants of the product of the target proto-oncogene; and

(c) returning the excised cells transfected with the vector to the body of the host to obtain expression of the cognate proto-oncogene in the host,

wherein the immune response delays onset of tumor growth.

18. A method according to claim 13 wherein the transfected cells are rendered non-dividing prior to return to the body of the host.

19. A method according to claim 17 wherein the transfected cells are returned to the body of the host by subcutaneous, intradermal or intraperitoneal administration.

20. A method according to claim 17 wherein the cognate proto-oncogene is selected from the group consisting of AKT-2, c-erbB-2, mdm-2, c-myc, c-myb, c-ras, c-src and c-yes.

21. A method according to claim 17 wherein the excised host cells comprise fibroblasts.

22. A method according to claim 17 wherein the professional antigen-presenting cells are selected from the group consisting of macrophages and dendritic cells.

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